

**METHOD AND SYSTEM FOR PROVIDING BACKSIDE VOLTAGE
CONTRAST FOR SILICON ON INSULATOR DEVICES**

ABSTRACT

5 The present inventive principles provide a method and system for performing
backside voltage contrast on an SOI device. The SOI semiconductor device includes
a bulk silicon, a box insulator residing on the bulk silicon and a silicon region on the
box insulator. The SOI semiconductor device further includes a plurality of
structures in the silicon region, the plurality of structures includes a conductive
structure. The method and system include mechanical dimpling and chemical etching
10 of the substrate to expose the box insulator. Optionally, a second chemical etch to
remove at least a portion of the box insulator may be performed. A charged particle
beam, such as energetic electrons from an SEM, for example, may be directed at the
backside of the device, and emitted secondary electrons observed.

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